DOI: 10.55643/fcaptp.4.63.2025.4778

David H.M. Hasibuan
PhD in Accounting, Associate Professor of the Postgraduate program, Institute of Business and Informatics of Kesatuan, Bogor, Indonesia;
e-mail: davidhasibuan@ibik.ac.id
ORCID: 0009-0001-9558-615X
(Corresponding author)

Dyah Purwanti
PhD in Accounting, Assistant Professor of Accounting, Polytechnic of State Finance STAN, Tangerang, Indonesia;
ORCID: 0000-0003-4372-9806

Joni Setiawan
Student, Institute of Business and Informatics of Kesatuan, Bogor, Indonesia;
ORCID: 0000-0001-9417-4244

Received: 22/03/2025
Accepted: 05/08/2025
Published: 31/08/2025

GREEN SUPPLY CHAIN MANAGEMENT AS A STRATEGY TO STRENGTHEN THE SUSTAINABILITY AND COMPETITIVE ADVANTAGE, AND FINANCIAL STABILITY: INSIGHTS FROM INDONESIAN MANUFACTURING FIRMS

ABSTRACT

As global environmental awareness grows, companies increasingly adopt eco-friendly mindsets and align their business strategies accordingly. Heightened external pressures serve as catalysts for firms to enhance their environmental performance. However, implementing green business practices often requires substantial investments, prompting managers to seek commensurate returns. The evaluation of sustainability performance thus remains a highly relevant and compelling area for further research. This study investigates the impact of green supply chain management (GSCM) on sustainability performance, competitive advantage, and financial stability. Despite growing global interest, empirical research on this topic—especially within Indonesia as an emerging economy—remains scarce. Using a quantitative approach, primary data were collected via questionnaires distributed to 85 managerial-level decision-makers, including Senior Managers, General Managers, and Directors within Indonesian manufacturing firms. Data were analyzed using Structural Equation Modelling (SEM). The results indicate that while GSCM significantly enhances sustainability performance, it does not directly influence competitive advantage or financial stability. However, sustainability performance functions as a critical mediating variable, significantly reinforcing the relationship between GSCM and both competitive advantage and financial stability. For the first time, this study empirically demonstrates the indirect pathway by which GSCM contributes to strategic and financial outcomes through sustainability in the context of Indonesian manufacturing firms. Managers, especially in Indonesia, are still hesitant to shift to green business practices because, apart from requiring expensive investments, they are not yet fully convinced of the benefits they will gain. Moreover, research on this subject is still limited, particularly in Indonesia as an emerging economy. By further developing the conceptual linkage between green practices and organizational performance in emerging markets, this study offers both theoretical and practical contributions. It highlights the strategic importance of embedding environmental and social considerations into core business operations, calling for firm-wide commitment to sustain green practices and foster long-term value creation.

Keywords: Green supply chain management (GSCM), sustainability, sustainability performance, competitive advantage, financial stability, mediation, manufacturing firms, Indonesia

JEL Classification: Q01

INTRODUCTION

In the last decade, GSCM has received serious attention in the research field and among operations management practitioners. Recently, this managerial axiom has rapidly developed as a fundamental organizational philosophy and become a proactive strategy to dominate potential environmental risks (Nazarova et al., 2021; Zou et al., 2021). Green supply chain initiatives play an important role in realizing the "three benefits,"

including social, environmental, and economic benefits, thereby supporting the sustainable evolution of society (Khokhar et al., 2023). GSCM emerged as a managerial paradigm that aims to improve company productivity while integrating environmental efficiency aspects into complex processes in every stage of the product life cycle (Pinto, 2020).

In the context of an emerging economy, concern for the environment is rising due to increasing competition and demands for environmentally friendly products. Recently, pressure has come from customers demanding to use "greener" products to reduce waste, environmental degradation, and problems related to pollution and contamination. The manufacturing industry has come under greater pressure to adopt green business practices that ultimately produce environmentally friendly products (Sheng et al., 2023). To achieve both, manufacturing industries have acknowledged the importance of their supply chain partners. As a result, many manufacturing companies are turning to their suppliers and consumers for creative solutions to environmental problems (Khan et al., 2023). With increasing interest in these responsibilities, many companies have identified "greening" initiatives as a competitive strategic approach (Afum et al., 2020).

The concept of GSCM has long been established in developed countries (Bezverkhyi, 2019; Bezverkhyi, 2024), but this concept is still relatively new for developing countries. The last group of countries, especially Asian countries, relies on the manufacturing sector to support their economic growth. Indonesia, one of the countries in Southeast Asia, is a country with a Gross Domestic Product with the largest contribution from the manufacturing industry. The latter industry in Indonesia is facing increasing pressure from two sides at once. First, the pressure from economic factors, where since the COVID-19 pandemic, economic recovery has not returned to normal. Indonesia's manufacturing sector faces challenges from global business dynamics (Naseer et al., 2023); one of the serious threats is the dominance of imported products from China in both regional and local markets, thereby increasing particularly local competition (Mayesti et al., 2021). The dramatic impact is that hundreds of manufacturing firms have stopped operations and declared bankruptcy throughout 2022-2024 (Rizqiyani et al., 2024). Second, the impact of climate change has resulted in accelerated deterioration of environmental quality in Indonesia, such as severe air pollution, waste, floods, landslides, and drought (Djalante et al., 2021). The continued impact of the climate threatens the stability of the supply chain of the processing industry (Alfarizi, 2022). Based on these facts, the Indonesian manufacturing sector is clearly facing crucial problems in sustainability due to intense competition and environmental issues.

According to the sluggish manufacturing sector in Indonesia, the implementation of GSCM has become a strategic issue for the sustainability and competitiveness of the firms. GSCM practices have been widely believed to be a strategy to improve efficiency in supply chains and help improve environmental performance, economic performance, and financial performance (Khokhar et al., 2023; Sheng et al., 2023). In addition, practitioners believe that GSCM is a new way to achieve better organizational performance in environmental management. Green innovation is expected to become an important performance indicator in the future (Afum et al., 2020). Supply chain management (SCM) is the coordination and management process of the complicated network of relationships that aims to deliver an appropriate product to the end-user or consumer (Pinto, 2020).

In the Indonesian context, managers have not fully believed that green supply chain management improves company performance. This is proven by the fact that there are still very few managers in manufacturing companies in Indonesia who have implemented GSCM throughout their production cycle (Novitasari & Agustia, 2022). Researchers on the topic of GSCM provide inconsistent evidence (Jasin et al., 2023; Dzikriansyah et al., 2023; Effendi et al., 2021), and there is still a lack of similar research in the manufacturing sector. This study proposes three research questions (RQ): (RQ1) Does GSCM improve sustainability performance; (RQ2) Does GSCM improve competitive advantage and financial stability; (RQ3) What are the potential links between GSCM, sustainability performance, and competitive advantage and financial stability. These three research questions will be answered using a quantitative approach from a questionnaire instrument for managers.

This study contributes to the literature and knowledge in two ways. First, a detailed and contextual structure is revealed, which links the six GSCM practices, sustainable performance (consisting of economic, environmental, and social), and the competitive advantage and financial stability of manufacturing firms. Second, the study delivers a better understanding of the mediating role of sustainable performance, which links GSCM to competitive advantage and financial stability. There is no mediating role defined in the literature, so this is a renewal of the rational understanding of the relationship between GSCM, sustainability performance, competitive advantage, and financial stability. This study also provides valuable contributions for managers. This article provides a guideline for managers adopting the best approach to enhance and improve their company's sustainable performance by implementing GSCM.

LITERATURE REVIEW

Legitimacy theory

Legitimacy theory posits that organizations strive to operate within the bounds of societal norms and expectations to maintain their legitimacy (Deegan, 2019). This theory implies the existence of a "social contract" between an organization and the society in which it operates. The social contract reflects societal expectations regarding whether an organization aligns with social norms and values. Meeting these expectations enhances an organization's legitimacy and acceptance within the community. Legitimacy theory underscores that organizations must fulfill societal expectations to secure public approval, enabling continued operations and ensuring their long-term sustainability.

Green Supply Chain Management and Financial Performance

Although the adoption of GSCM is driven more by external pressure, many parties believe that GSCM is beneficial for firms because it provides benefits in terms of economy, reputation, and environmental sustainability (Khokhar et al., 2023). In terms of the economy, firms increase operational efficiency by obtaining quality raw materials, saving energy, and reducing waste through resource efficiency. Waste management costs can be reduced by recycling mechanisms or reusing materials. In addition to cost efficiency, the implementation of GSCM can optimize logistics and transportation costs through synergy with suppliers (Han & Huo, 2020).

At the beginning of the introduction of GSCM, company managers were initially skeptical about investing in expensive green technology. However, along with the dynamics of green technology innovation development, companies produce environmentally friendly products with premium value. Due to the strengthening of environmental awareness at the global level, consumers will be willing to pay more for environmentally friendly products. Moreover, the global market is more open to green products and recycled products because recently, many countries have imposed strict standards for environmentally friendly products. Thus, the implementation of GSCM stimulates an increase in financial performance (Sheng et al., 2023), but the impact is not immediately realized in the short term. Managers must be patient to reap the benefits of implementing GSCM (Khan et al., 2023).

Despite a growing body of literature providing empirical support for the positive effect of GSCM practices on company performance, little is known about the intermediary factors that may influence the nature and intensity of the relationship between GSCM implementation and financial performance. Most previous studies have analyzed the direct impact of GSCM practices on firm performance (Alexandrou et al., 2022; Khan et al., 2020). This, of course, limits the understanding of how GSCM practices affect financial performance, as these research models do not test the underlying mechanisms (Alexandrou et al., 2022). Therefore, this study explains how GSCM practices integrated into the supply chain network impact operational efficiency, which can become a competitive advantage and drive sustainable performance.

Green supply chain management and sustainability performance

Green supply chain management (GSCM) and sustainability performance are key elements in advancing corporate responsibility. GSCM integrates environmental principles into supply chain activities. It encompasses practices such as green procurement, eco-friendly production, efficient distribution, and reverse logistics. The goal is to reduce environmental impact while improving resource utilization and operational efficiency (Yildiz Çankaya & Sezen, 2019). Sustainability performance refers to a firm's ability to achieve environmental, social, and economic objectives simultaneously. It measures the effectiveness of strategies aimed at long-term ecological and societal well-being (Chen et al., 2023).

GSCM has a profound influence on sustainability performance. It enhances environmental stewardship, optimizes resource usage, and promotes organizational alignment with sustainable goals. Empirical studies confirm this positive correlation (Yildiz Çankaya & Sezen, 2019; Han & Huo, 2020). Firstly, GSCM minimizes environmental degradation. Practices like green procurement and eco-friendly manufacturing reduce pollution and waste. These activities lower the ecological footprint of businesses. Yildiz Çankaya & Sezen (2019) found that firms implementing GSCM practices achieved superior environmental outcomes. Reduced emissions and waste management enhance sustainability metrics. Secondly, GSCM fosters efficient resource utilization. Energy-saving technologies and recycling initiatives reduce material wastage. This optimization lowers costs while improving sustainability. Han & Huo (2020) highlighted the role of green supply chain integration in achieving resource efficiency. Enhanced coordination among suppliers, manufacturers, and distributors is critical to this success. Thirdly, GSCM aligns business practices with global sustainability goals. It supports compliance with environmental regulations and consumer demands for sustainable products. Chen et al. (2023) emphasized the moderating role of leadership in strengthening the link between GSCM and sustainability performance. Effective leadership drives the adoption and integration of GSCM across organizational levels.

DOI: 10.55643/fcaptp.4.63.2025.4778

Moreover, GSCM contributes to social and economic sustainability. It creates green job opportunities and promotes ethical sourcing. Acquah et al. (2021) noted the synergy between green human resource management and GSCM practices. This synergy enhances organizational performance while advancing broader sustainability objectives. Empirical evidence highlights the significance of GSCM in improving sustainability performance. Han & Huo (2020) reported that firms with integrated green supply chains achieved better environmental and operational outcomes. Similarly, Yildiz Çankaya & Sezen (2019) observed that GSCM practices positively impact all three dimensions of sustainability: environmental, social, and economic.

In conclusion, GSCM is instrumental in achieving superior sustainability performance. It reduces environmental harm, optimizes resources, and aligns business practices with global sustainability standards. Empirical studies validate its effectiveness in enhancing environmental, social, and economic outcomes. Firms adopting GSCM can achieve long-term resilience and competitiveness while addressing pressing environmental challenges. The integration of leadership and green practices ensures the successful realization of these goals. Therefore, the first hypothesis of the study is as follows:

H_1: GSCM has a positive effect on sustainability performance.

Green supply chain management, competitive advantage, and financial stability

Green supply chain management (GSCM) and competitive advantage are critical concepts in modern business. GSCM integrates environmental considerations into supply chain operations. It includes green procurement, production, distribution, and reverse logistics. The primary goal is to reduce environmental impact while enhancing operational efficiency (Al-Khawaldah et al., 2022). Competitive advantage refers to a firm's ability to outperform competitors. It arises from cost leadership, differentiation, or innovation, leading to superior market performance (Sharabati, 2021).

GSCM directly influences competitive advantage. It enhances efficiency, reduces costs, and improves brand image. Firms implementing GSCM practices achieve sustainability and strengthen their market position. Research supports this positive relationship. Al-Khawaldah et al. (2022) demonstrated that GSCM improves sustainability performance. This improvement translates into economic and competitive benefits.

First, GSCM reduces costs. It optimizes resource use, lowers energy consumption, and minimizes waste. For instance, recycling initiatives and energy-efficient technologies decrease operational expenses. Sharabati (2021) emphasized that integrating green practices into supply chains amplifies cost savings. These savings enhance financial performance, a key factor in achieving competitive advantage. *Second*, GSCM enables differentiation. Environmentally conscious consumers prefer sustainable products. Companies adopting green practices cater to this demand. This differentiation attracts customers and fosters loyalty. Nu'man et al. (2020) highlighted that sustainable supply chain practices mediate the relationship between differentiation and firm performance. Differentiation strengthens a firm's position in sustainability-focused markets. *Third*, GSCM builds a positive reputation. It signals corporate social responsibility (CSR). A strong CSR image attracts stakeholders, including investors and employees. Firms with green reputations gain trust and loyalty. Al-Khawaldah et al. (2022) linked GSCM with organizational ambidexterity. This alignment improves internal and external stakeholder relationships. Enhanced reputation boosts competitive positioning.

Empirical evidence confirms the GSCM-competitive advantage link. Sharabati (2021) found that GSCM practices lead to better sustainability performance. This performance improvement supports economic gains and competitive strength. Saragih et al. (2020) highlighted the role of supply chain integration in enhancing operational capabilities critical for achieving competitiveness. Collaborating with suppliers and customers on sustainability strengthens competitive advantages.

In conclusion, GSCM significantly impacts competitive advantage. It reduces costs, supports differentiation, and enhances reputation. Empirical studies validate these benefits. Firms adopting GSCM achieve sustainability and long-term competitiveness. Integrating GSCM with innovation and collaboration further amplifies this impact. GSCM is a strategic necessity for market success and environmental responsibility. Therefore, the second hypothesis of the study is as follows:

H2: GSCM has a positive effect on competitive advantage and financial stability.

Sustainability performance, competitive advantage, and financial stability

Sustainability performance refers to an organization’s ability to balance environmental, social, and economic dimensions in its operations, ensuring long-term viability and stakeholder satisfaction. Competitive advantage denotes the capability of a firm to outperform its rivals by delivering superior value through cost leadership, differentiation, or innovation. The intersection of these concepts has become a focal point for organizations seeking to align profitability with environmental and social responsibilities.

Sustainability performance significantly enhances competitive advantage by reducing costs, improving reputation, and driving innovation. Organizations that excel in sustainability initiatives often achieve operational efficiency through reduced resource consumption and waste. For example, energy-efficient technologies and waste reduction strategies lower production costs while increasing profitability. Waqas et al. (2021) emphasize that firms adopting lean, green, and agile supply chain practices gain superior cost efficiency, directly contributing to a stronger competitive position.

Moreover, sustainability performance strengthens corporate reputation, which is critical in today's socially conscious market. Firms that demonstrate environmental responsibility attract customers, investors, and business partners, building trust and loyalty. A positive reputation not only differentiates an organization but also creates barriers for competitors to replicate its market positioning. Innovation is another key benefit of sustainability performance. By focusing on eco-friendly products, renewable energy adoption, and process redesign, companies can unlock new market opportunities and improve customer satisfaction. Waqas et al. (2021) highlight that green innovation mediates the relationship between sustainable practices and competitive advantage, underlining its critical role in modern business strategies. Companies that innovate sustainably not only meet regulatory and societal demands but also create a unique value proposition for consumers.

Empirical evidence consistently validates the link between sustainability performance and competitive advantage. For instance, research by Han & Huo (2020) demonstrates that sustainability-oriented supply chains enhance operational and financial outcomes, which directly strengthens competitive advantage. Similarly, Chen et al. (2023) found that firms achieving high sustainability performance enjoy improved market performance, enhanced customer loyalty, and stronger stakeholder relationships.

In conclusion, sustainability performance is a critical driver of competitive advantage. It enables firms to reduce costs, enhance reputation, foster innovation, and address institutional pressures effectively. Empirical studies substantiate the positive relationship between these variables, emphasizing the importance of integrating sustainability into strategic frameworks. Companies that prioritize sustainability are better equipped to navigate contemporary challenges, ensuring long-term resilience and success in an increasingly dynamic market environment. Therefore, the third hypothesis of the study is as follows:

H_3: Sustainability performance has a positive effect on competitive advantage and financial stability.

The role of sustainability performance in mediating the relationship between green supply chain management (GSCM) and competitive advantage and financial stability represents a critical area of exploration in sustainable business practices. As organizations increasingly adopt environmentally-conscious strategies, the integration of GSCM into operational frameworks becomes pivotal. This integration, however, achieves optimal outcomes when mediated by robust sustainability performance metrics.

GSCM incorporates eco-friendly principles across supply chain activities, including green procurement, production, distribution, and reverse logistics. These practices aim to reduce environmental harm, enhance resource utilization, and align businesses with global sustainability goals (Yildiz Çankaya & Sezen, 2019). Empirical evidence underscores the positive impact of GSCM on sustainability performance. By minimizing waste, reducing emissions, and optimizing resources, GSCM significantly advances environmental, social, and economic outcomes (Han & Huo, 2020). Firms embracing GSCM practices report superior sustainability metrics, which reflect their ability to meet ecological and societal demands while ensuring economic viability (Chen et al., 2023; Setiawan et al., 2024).

Sustainability performance, characterized by a firm's capacity to achieve environmental stewardship, social responsibility, and economic efficiency, acts as a bridge between GSCM and competitive advantage (Rehman et al., 2021; Setiawan et al., 2025). Effective sustainability performance not only demonstrates a commitment to ecological well-being but also creates opportunities for differentiation, cost efficiency, and enhanced reputation. For instance, environmentally-conscious consumers increasingly prefer brands that align with their values, making sustainability performance a cornerstone of market differentiation.

The mediating role of sustainability performance becomes evident when considering the direct and indirect effects of GSCM on competitive advantage (Rehman et al., 2021). Directly, GSCM fosters operational efficiency and cost reduction through practices such as recycling and energy optimization (Sharabati, 2021). Indirectly, these practices enhance sustainability performance, which in turn strengthens competitive positioning. Sustainability performance allows firms to capitalize on the benefits of GSCM by translating them into tangible economic and reputational gains. Improved sustainability metrics attract stakeholders, build customer loyalty, and ensure compliance with regulatory standards, all of which are critical to achieving competitive advantage.

DOI: 10.55643/fcaptp.4.63.2025.4778

Furthermore, sustainability performance amplifies the differentiation potential of GSCM. By showcasing measurable improvements in environmental and social outcomes, firms can enhance their value proposition to consumers and investors. For instance, Han & Huo (2020) highlighted that organizations with strong sustainability performance effectively bridge the gap between operational efficiency and market leadership. This alignment not only satisfies consumer demand for sustainable products but also fortifies a firm's position in sustainability-driven markets. The empirical connection between sustainability performance and competitive advantage is well-documented. Research by Yildiz Çankaya & Sezen (2019) and Al-Khawaldah et al. (2022) demonstrates that firms with superior sustainability performance, driven by GSCM practices, achieve better financial and operational outcomes. These outcomes include reduced costs, enhanced reputation, and increased market share—all essential components of competitive advantage.

In conclusion, sustainability performance plays a vital mediating role in the relationship between GSCM and competitive advantage. While GSCM directly influences operational efficiency and market positioning, its full potential is realized when coupled with strong sustainability performance. This mediation ensures that the environmental and operational benefits of GSCM translate into long-term competitiveness. Firms that integrate sustainability into their strategic framework are better positioned to achieve resilience and success in an increasingly sustainability-conscious marketplace. Therefore, the fourth hypothesis of the study is as follows:

H4: Sustainability performance mediates the impact of GSCM on competitive advantage and financial stability.

AIMS AND OBJECTIVES

This study aims to investigate the role of Green Supply Chain Management (GSCM) as a strategic approach to enhance sustainability performance and competitive advantage in Indonesian manufacturing firms. Specifically, it seeks to examine the direct impact of GSCM on sustainability performance and competitive advantage, as well as the mediating role of sustainability performance in strengthening the link between GSCM and competitive advantage.

METHODS

The unit of analysis in the study is organizations, specifically companies in the food, beverage, processed agricultural products, chemical, pharmaceutical, textile, electronics, and paper industries. These industries were selected due to their significant involvement in waste management, pollution control, machinery utilization, and environmental and social impacts. The sampling framework targets top-level leaders, such as senior managers, general managers, directors, and commissioners. These individuals oversee and supervise operational activities, ensuring the data collected reflects relevant and representative practices within companies operating in Indonesia.

Primary data collection was conducted using an online questionnaire as the main instrument. The questionnaire was developed via Google Forms and distributed to selected respondents through a non-random sampling approach. A total of 92 company representatives responded to the questionnaire, with 85 responses deemed suitable based on predetermined criteria. The respondents answered questions that align with business practices in their respective companies, ensuring practical relevance.

The study employed a Likert scale ranging from 1 to 6, where 1 indicates "Strongly Disagree" and 6 indicates "Strongly Agree." The absence of a neutral option ensures a definitive stance on each statement provided. The measurement items for each variable are detailed in Table 1. Data analysis was conducted using Structural Equation Modelling-Partial Least Squares (SEM-PLS). The PLS analysis involved two stages: evaluating the measurement model (outer model) and assessing the structural model (inner model). This methodological approach ensures rigorous testing of both the reliability and validity of measurement instruments and the hypothesized relationships within the structural model. This design provides robust and representative insights into organizational practices within the targeted industries, contributing to a deeper understanding of business operations in Indonesia.

Table 1. The Operational Measurement.

Variable	Dimension	Item	Source
Green supply chain management (GSCM)	Green Purchase (GP)	Specify eco-friendly design requirements (GP1)	Yildiz Çankaya & Sezen (2019)
		Collaborate for environmental goals (GP2)	
		Select eco-friendly suppliers (GP3)	
		Require ISO 14000 certification (GP4)	
		Optimize sourcing through reduction (GP5)	
	Green Manufacture (GM)	Minimize noise during production (GM1)	
		Replace hazardous production materials (GM2)	
		Filter and control emissions (GM3)	
		Plan production, reduce waste (GM4)	
		Design for energy efficiency (GM5)	
	Green Distribution and Packaging (GDP)	Reduce packaging materials (GDP1)	
		Use eco-friendly packaging materials (GDP2)	
		Use reusable packaging containers (GDP3)	
		Optimize shipments and loading (GDP4)	
		Optimize transportation routing (GDP5)	
	Internal Environment Management (IEM)	Cross-functional collaboration for sustainability (IEM1)	
		Establish the environmental protection index (IEM2)	
		Environmental management system implemented (IEM3)	
		Support for environmental practices (IEM4)	
		Company efforts surpass environmental regulations (IEM5)	
	Green Marketing (GMK)	Provide voluntary environmental updates (GMK1)	
		Sponsor environmental events and collaborations (GMK2)	
		Promote environmental benefits in marketing (GMK3)	
		Label raw material packages for ease (GMK4)	
		Eco products boost consumer purchase intent (GMK5)	
	Green Education (GE)	Conduct environmental awareness for suppliers (GE1)	
		Environmental seminars for executives and managers (GE2)	
		Support government environmental protection programs (GE3)	
Sustainability Performance (SP)	Economic performance (KE)	Lower material purchase costs (KE1)	Rehman et al. (2021)
		Reduce energy consumption costs (KE2)	
		Reduce company waste disposal costs (KE3)	
		Company sales growth (KE4)	
		Company profit growth (KE5)	
	Social performance (KS)	Enhance customer satisfaction (KS1)	
		Enhance company image with customers (KS2)	
		Strengthen company relations with stakeholders (KS3)	
		Increase awareness and protect community rights (KS4)	
		Enhance employee training and education (KS5)	
		Improve employee health and safety (KS6)	
	Environmental Performance (KL)	Improve company site environmental conditions (KL1)	
		Reduce liquid and/or solid waste (KL2)	
		Reduce air emissions (KL3)	
		Reduce hazardous material consumption (KL4)	
		Reduce environmental accident frequency (KL5)	
Competitive Advantage (KB)		Affordable products with low costs (KB1)	Waqas et al. (2021)
		High-quality products for sale (KB2)	
		Product innovation (KB3)	
		Delivery dependence (KB4)	
		Timely product market launch (KB5)	

DOI: 10.55643/fcaptp.4.63.2025.4778

RESULTS

Respondents profile

The respondent profile (Table 2) demonstrates a diverse representation of top-level leaders across industries. Male respondents dominate the sample, comprising 74%, while females account for 26%, indicating a male-dominated leadership structure. The majority of respondents (81%) are above 40 years old, reflecting experienced leadership, while only a small proportion (8%) are below 40. Most respondents (75%) hold a bachelor's degree, with 19% possessing a master's degree and 6% a doctorate, highlighting a well-educated leadership cohort.

Table 2. The Respondent Profile.

Category	f	%
Gender		
Male	63	74
Female	22	26
Age		
25 – 30 years old	3	4
31 – 35 years old	3	4
36 – 40 years old	10	12
Above 40 years old	69	81
Formal Education		
Bachelor	64	75
Master	16	19
Doctorate	5	6
Working Experiences		
1 – 5 years	12	14
6 – 10 years	8	9
11 – 15 years	10	12
Above 15 years	55	65
Position		
Commissioner	4	5
Associate Director/ Director	31	36
General Manager	30	35
Senior Manager	20	24
Industry Type		
Agricultural Food Products	25	29
Processed Food and Beverages	25	29
Chemicals and Pharmaceuticals	11	13
Construction Materials	5	6
Household Goods	5	6
Apparel and Luxury Goods	5	6
Electrical Equipment	4	5
Automotive Components	3	4
Forestry and Paper Products	2	2
Number of Employee		
Above 500	47	55
200 – 500	17	20
151 – 200	4	5
101 – 150	3	4
50 – 100	8	9
Less than 50	6	7
Firm Age		
1 – 5 years	5	6
5 – 10 years	14	16
Above 15 years	66	78

Work experience is notably extensive, with 65% of respondents having more than 15 years of professional experience, demonstrating significant expertise in their fields. Leadership positions are distributed among directors and associate directors (36%), general managers (35%), senior managers (24%), and commissioners (5%), reflecting a broad range of decision-making roles.

Respondents represent a variety of industries, with the largest proportions in agricultural food products (29%) and processed food and beverages (29%). Other industries include chemicals and pharmaceuticals (13%), construction materials (6%), household goods (6%), apparel and luxury goods (6%), and smaller representations from electrical equipment, automotive components, and forestry and paper products. These industries align with sectors known for environmental and operational challenges.

Most respondents (55%) come from companies with over 500 employees, indicating a strong presence of large-scale enterprises. Medium-sized companies (200–500 employees) account for 20%, while smaller firms comprise the remaining 25%. Additionally, the majority of firms (78%) have been operational for over 15 years, reflecting a mature and established business environment. Only 6% are relatively new, with 1–5 years of operation.

Descriptive statistics analysis

The descriptive analysis of green supply chain management (GSCM) practices highlights varying levels of implementation across its dimensions (Table 3). Green purchasing shows a strong emphasis on collaboration for environmental goals and specifying eco-friendly design requirements, reflecting widespread adoption of sustainable practices. However, activities such as requiring ISO 14000 certification are less common, suggesting that some firms may face barriers to implementing standardized certifications. Green manufacturing practices, such as replacing hazardous materials and filtering emissions, are consistently prioritized, indicating a strong focus on reducing environmental harm. In distribution and packaging, optimizing shipments and transportation routes emerges as a key focus, while efforts to reduce packaging materials appear less emphasized, pointing to potential areas for improvement.

Table 3. Descriptive statistics analysis results.

Variable	Dimension	Item	Mean	Standard Deviation
Green Supply Chain Management (GSCM)	Green Purchase (GP)	Specify eco-friendly design requirements (GP1)	5.012	1.3671
		Collaborate for environmental goals (GP2)	5.153	1.3048
		Select eco-friendly suppliers (GP3)	4.929	1.2798
		Require ISO 14000 certification (GP4)	4.788	1.1862
		Optimize sourcing through reduction (GP5)	4.918	1.0714
	Green Manufacture (GM)	Minimize noise during production (GM1)	4.941	1.0391
		Replace hazardous production materials (GM2)	5.200	0.7684
		Filter and control emissions (GM3)	5.294	0.8284
		Plan production, reduce waste (GM4)	5.118	0.9438
		Design for energy efficiency (GM5)	5.012	0.9697
	Green Distribution and Packaging (GDP)	Reduce packaging materials (GDP1)	4.741	1.0818
		Use eco-friendly packaging materials (GDP2)	4.588	1.1882
		Use reusable packaging containers (GDP3)	4.682	1.0260
		Optimize shipments and loading (GDP4)	5.388	1.0129
		Optimize transportation routing (GDP5)	4.929	1.2610
	Internal Environment Management (IEM)	Cross-functional collaboration for sustainability (IEM1)	5.235	0.9716
		Establish the environmental protection index (IEM2)	4.953	1.0455
		Environmental management system implemented (IEM3)	5.129	0.9975
		Support for environmental practices (IEM4)	5.482	0.7960
		Company efforts surpass environmental regulations (IEM5)	5.094	1.0308
	Green Marketing (GMK)	Provide voluntary environmental updates (GMK1)	4.306	1.2820
		Sponsor environmental events and collaborations (GMK2)	4.576	1.3036
		Promote environmental benefits in marketing (GMK3)	4.859	1.1968
		Label raw material packages for ease (GMK4)	5.059	1.0276
		Eco products boost consumer purchase intent (GMK5)	4.812	1.0521

(continued on next page)

DOI: 10.55643/fcaptp.4.63.2025.4778

Table 3. Continued.

Variable	Dimension	Item	Mean	Standard Deviation
Green Supply Chain Management (GSCM)	Green Education (GE)	Conduct environmental awareness for suppliers (GE1)	4.506	1.3329
		Environmental seminars for executives and managers (GE2)	4.753	1.1742
		Support government environmental protection programs (GE3)	5.271	1.0509
Sustainability Performance (SP)	Economic Performance (KE)	Lower material purchase costs (KE1)	4.212	1.4066
		Reduce energy consumption costs (KE2)	4.729	1.3219
		Reduce company waste disposal costs (KE3)	5.271	0.7926
		Company sales growth (KE4)	4.671	1.2572
		Company profit growth (KE5)	4.635	1.1217
	Social Performance (KS)	Enhance customer satisfaction (KS1)	4.565	1.2387
		Enhance company image with customers (KS2)	4.918	1.1256
		Strengthen company relations with stakeholders (KS3)	5.259	0.8612
		Increase awareness and protect community rights (KS4)	5.412	0.6778
		Enhance employee training and education (KS5)	5.388	0.7574
		Improve employee health and safety (KS6)	5.341	0.8529
	Environmental Performance (KL)	Improve company site environmental conditions (KL1)	5.247	0.8578
		Reduce liquid and/or solid waste (KL2)	5.376	0.7712
		Reduce air emissions (KL3)	5.176	0.8753
		Reduce hazardous material consumption (KL4)	5.388	0.7574
		Reduce environmental accident frequency (KL5)	5.565	0.6805
Competitive Advantage (KB)	-	Affordable products with low costs (KB1)	5.000	1.2724
		High-quality products for sale (KB2)	5.529	0.6829
		Product innovation (KB3)	5.459	0.7646
		Delivery dependence (KB4)	5.482	0.7337
		Timely product market launch (KB5)	5.224	0.9306

Sustainability performance demonstrates notable achievements, particularly in social and environmental dimensions. Economic outcomes show effective cost management, such as reducing waste disposal costs, which reflects the operational efficiency of the companies surveyed. Social performance is particularly strong, with firms enhancing community rights and improving employee health and safety. These efforts underscore a commitment to social responsibility and stakeholder engagement. Environmental performance shows significant progress, particularly in reducing environmental accidents and waste, indicating proactive measures to address ecological concerns. The overall consistency in these dimensions reflects the organization's alignment with sustainability objectives.

Competitive advantage results reveal robust performance across multiple areas, with a strong focus on product quality and timely market launches. These aspects demonstrate companies' abilities to meet market demands while maintaining operational excellence. Efforts in product innovation and affordability further strengthen competitive positioning, though some variability suggests that firms prioritize these aspects differently based on their strategic goals. Collectively, these findings highlight the integration of sustainability practices into competitive strategies, showcasing how firms align environmental objectives with business excellence to achieve long-term success.

Based on Table 3, the description of economic performance shows that the cost efficiency aspect of waste handling has decrease significantly. The average score of the waste cost reduction aspect reaches 5.27 (the result is calculated as the average of the 1-6 interval scale). After the waste cost reduction, managers asserted that GSCM practices led to energy savings. After that, they also provide a perspective of belief that the implementation of GSCM has an impact on increasing sales and profits. This perspective is shown by the positive perception of managers who gave a high level of agreement to the impact of GSCM on increasing sales (4.67) and on increasing profits (4.63). The beliefs of these managers are evenly distributed, with the standard deviation of both perceptions being around 1.

Confirmatory factor analysis

In the first confirmatory factor analysis (CFA), five measurement items were identified with standardized loading factor (SLF) values below the threshold recommended by Hair et al. (2013). These items were GP5 (SLF = 0.215), GDP4 (SLF = 0.284), GDP5 (SLF = 0.235), KS1 (SLF = -0.004), and KS2 (SLF = 0.235). Consequently, these items were removed from

the model, and a second CFA was conducted. The results indicated that all remaining measurement items exceeded the threshold, confirming that the model successfully met the criteria for a robust outer model (Table 4).

Table 4. Evaluation of the measurement model.

Items	Loadings	Composite Reliability (CR)	Average variance extracted (AVE)
Green Purchase (GP)		0.91	0.726
GP1	0.873		
GP2	0.904		
GP3	0.907		
GP4	0.708		
Green Manufacture (GM)		0.89	0.628
GM1	0.663		
GM2	0.768		
GM3	0.886		
GM4	0.852		
GM5	0.775		
Green Distribution and Packaging (GDP)		0.89	0.73
GDP1	0.880		
GDP2	0.938		
GDP3	0.732		
Internal Environment Management (IEM)		0.90	0.641
IEM1	0.773		
IEM2	0.770		
IEM3	0.844		
IEM4	0.773		
IEM5	0.840		
Green Marketing (GMK)		0.93	0.716
GMK1	0.818		
GMK2	0.928		
GMK3	0.898		
GMK4	0.772		
GMK5	0.804		
Green Education (GE)		0.82	0.61
GE1	0.835		
GE2	0.913		
GE3	0.779		
Economic Performance (KE)		0.91	0.67
KE1	0.860		
KE2	0.838		
KE3	0.608		
KE4	0.926		
KE5	0.941		
Social Performance (KS)		0.84	0.57
KS3	0.694		
KS4	0.736		
KS5	0.912		
KS6	0.770		
Environmental Performance (KL)		0.87	0.686
KL1	0.925		
KL2	0.854		
KL3	0.868		
KL4	0.776		
KL5	0.698		
Green Supply Chain Management (GSCM)		0.92	0.67
GP	0.710		
GM	0.804		
GDP	0.718		
IEM	0.843		
GMK	0.877		
GE	0.929		
Sustainability Performance		0.89	0.73
KE	0.705		
KS	0.929		
KL	0.915		
Competitive Advantage		0.87	0.568
KB1	0.661		
KB2	0.565		
KB3	0.878		
KB4	0.847		
KB5	0.771		

DOI: 10.55643/fcaptp.4.63.2025.4778

An analysis of discriminant validity was performed using the Fornell-Larcker Criterion, as presented in Table 5. This method involved comparing the AVE value for each construct with its correlations to other constructs, following the guidelines of Hair et al. (2013). The results revealed that the square root of the AVE for each construct exceeded its correlations with other constructs. This confirmed that all constructs in the model were distinct from one another.

Table 5. Discriminant Validity.

Variable	GSCM	SP	KB
GSCM	0.819		
SP	0.765	0.854	
KB	0.589	0.694	0.754

Structural model and hypothesis testing

Before evaluating the structural model, a collinearity assessment was conducted by examining the variance inflation factor (VIF) values. The findings indicated that all VIF values fell below the limit suggested by Hair et al. (2013). Consequently, no issues of collinearity were identified among the constructs.

The next step involved examining the R-square value, which indicates the model's predictive capability by representing the variance in endogenous variables explained by the exogenous variables. The findings demonstrated that the exogenous variables moderately explained the variability of all endogenous variables, as shown in Table 6. Lastly, a goodness-of-fit analysis was conducted to evaluate how effectively the proposed model aligned with the observed data. The results indicated that the research model sufficiently captured the data, exhibited acceptable predictive power, and was suitable for progressing to the hypothesis testing phase, as detailed in Table 7.

Table 6. The Results.

Variable	R Square	R Square Adjusted
Competitive Advantage	0.492	0.479
Sustainability Performance	0.825	0.823

Table 7. Goodness-of-fit test.

Parameter	Saturated model	Estimated model
SRMR	0.039	0.069
d_ULS	0.250	1.528
d_G	0.225	0.307
Chi-square	693.635	831.262
NFI	0.910	0.899

The hypothesis testing results provide critical insights into the relationships between green supply chain management (GSCM), sustainability performance, and competitive advantage. Hypothesis 1 (H1) demonstrates a strong and statistically significant positive relationship between GSCM and sustainability performance, with a high path estimate and a t-statistic well above the threshold for significance. This finding underscores the effectiveness of GSCM practices in enhancing sustainability performance, highlighting that organizations adopting green supply chain strategies are better positioned to achieve environmental, social, and economic sustainability goals.

The results for Hypothesis 2 (H2) indicate that Green Supply Chain Management (GSCM) does not have a direct and significant effect on competitive advantage. The negative path estimates and low t-statistic suggest that while GSCM is essential for achieving sustainability goals, it may not independently drive competitive benefits such as cost efficiency, product quality, or market responsiveness. This outcome implies that GSCM's potential to enhance competitive advantage likely depends on its integration with broader strategic initiatives and alignment with core business priorities.

Hypothesis 3 (H3) establishes a significant and robust positive relationship between sustainability performance and competitive advantage. The strong path estimate and highly significant t-statistic indicate that organizations achieving high

sustainability performance can leverage these achievements to gain a competitive edge. This finding highlights the strategic importance of sustainability in enhancing organizational competitiveness, as stakeholders increasingly value sustainable practices in market positioning and reputation.

Lastly, Hypothesis 4 (H4) confirms the mediating role of sustainability performance in the relationship between GSCM and competitive advantage. The significant path estimate and t-statistic indicate that GSCM contributes to competitive advantage indirectly through its impact on sustainability performance. This mediated relationship emphasizes the necessity of translating GSCM initiatives into tangible sustainability outcomes to achieve competitive gains, reinforcing the critical role of sustainability as a bridge between green practices and market success.

Table 8. Hypothesis testing.

Path		Estimate	Standard deviation	t-statistics	P -values	Conclusion
H1	GSCM → Sustainability Performance	0.908	0.199	4.559	0.000	Supported
H2	GSCM → Competitive Advantage	-0.236	0.222	1.062	0.144	Not Supported
H3	Sustainability Performance → Competitive Advantage	0.908	0.199	4.559	0.000	Supported
H4	GSCM → Sustainability Performance → Competitive Advantage	0.825	0.185	4.449	0.000	Supported

DISCUSSION

By addressing existing research gaps, particularly within the context of Indonesia as an emerging economy, this study contributes to the theoretical discourse on sustainable supply chain practices and provides practical insights for managerial decision-making in fostering environmentally responsible and competitive business strategies. This previous study provides a very limited logical explanation of how GSCM impacts company performance. This study used a questionnaire instrument that was delivered personally to each manager, and the responses shown by GSCM were able to improve economic, social, and environmental performance directly. The study develops a logical explanation that green purchasing, environmentally friendly distribution and packaging, green production, and environmentally conscious suppliers have an impact on reducing waste management costs, saving energy, and increasing sustainability performance. After improving performance, the company has a competitive advantage and sustainable financial stability.

The hypothesis tests confirm that Green Supply Chain Management (GSCM) positively and significantly influences sustainability performance. This finding underscores that the implementation of GSCM practices contributes to achieving superior environmental, social, and economic outcomes, aligning with contemporary sustainability imperatives (Acquah et al., 2021; Chen et al., 2023; Han et al., 2020; Yildiz Çankaya, Sezen, 2019). Each dimension of GSCM plays a crucial role in driving these outcomes, reflecting the multidimensional impact of green practices on organizational performance.

The dimension of Green Purchase, characterized by the selection of eco-friendly suppliers and the integration of environmentally friendly design requirements, contributes significantly to sustainability performance by reducing environmental impacts at the procurement stage. Similarly, the Green Manufacture enhances environmental and economic performance through practices like minimizing emissions, replacing hazardous materials, and designing energy-efficient processes, which collectively promote operational efficiency and reduce waste.

Green Distribution and Packaging further bolsters sustainability performance by optimizing transportation and reducing packaging materials, thereby minimizing the carbon footprint of logistics activities. Moreover, Internal Environment Management facilitates cross-functional collaboration and the establishment of environmental management systems, which not only enhance compliance with regulations but also promote innovation and efficiency in sustainability practices. These initiatives directly contribute to the achievement of social and environmental performance goals.

The roles of Green Marketing and Green Education are equally critical. Green marketing practices, such as promoting the environmental benefits of products and sponsoring eco-friendly initiatives, enhance social performance by building customer trust and improving organizational reputation. Green education, which involves conducting environmental awareness programs and supporting government initiatives, strengthens social responsibility and community engagement. Together, these dimensions of GSCM form a comprehensive approach that enables organizations to achieve superior sustainability performance across economic, social, and environmental dimensions. This multidimensional impact validates the strategic importance of adopting GSCM practices to meet sustainability goals effectively.

DOI: 10.55643/fcaptp.4.63.2025.4778

The analysis reveals that Green Supply Chain Management (GSCM) does not directly enhance competitive advantage, as indicated by the non-significant path estimate and low t-statistic. Practices like green purchasing, manufacturing, and packaging, while beneficial for sustainability, do not directly contribute to cost efficiency, product innovation, or delivery reliability. This outcome highlights the importance of integrating sustainability performance into broader strategic objectives to unlock competitive advantages (Al-Khawaldah et al. 2022). GSCM's contributions, such as improved resource efficiency and environmental compliance, can create indirect pathways to competitive benefits when aligned with business strategies focused on cost efficiency, innovation, and market differentiation. Thus, firms should view GSCM as a foundational practice that requires complementary efforts to translate sustainability outcomes into tangible competitive gains.

The study provides evidence that sustainability performance has a significant and positive impact on competitive advantage. Strong sustainability performance, measured through economic, social, and environmental dimensions, directly contributes to enhancing competitive advantage indicators such as cost efficiency, product quality, innovation, delivery reliability, and market responsiveness (Sharabati, 2021). For instance, economic sustainability, through cost reduction in material procurement and waste disposal, allows companies to offer affordable products. Social sustainability, including improved employee health and safety and enhanced stakeholder relations, fosters trust and operational efficiency, strengthening delivery reliability and brand loyalty. Environmental sustainability, demonstrated by reducing emissions and hazardous materials, supports innovation and aligns products with eco-conscious market demands, further solidifying competitive positioning. These results emphasize the strategic importance of embedding sustainability into business operations to achieve long-term competitive success.

The ultimate result of the study highlights the mediating role of sustainability performance in linking green supply chain management (GSCM) to competitive advantage. While GSCM practices alone may not directly enhance competitive advantage, their contribution becomes significant when they lead to improved sustainability outcomes. This indicates that dimensions of GSCM, such as eco-friendly purchasing, green manufacturing, and internal environmental management, must translate into measurable economic, social, and environmental benefits to create competitive gains. For example, cost savings from resource efficiency (economic), enhanced stakeholder relationships (social), and reduced emissions (environmental) can strengthen a firm's market positioning through product innovation, delivery reliability, and cost competitiveness. This finding underscores the importance of integrating sustainability goals into GSCM strategies to bridge the gap between operational greening and competitive success.

The findings provide new evidence and a better understanding of previous research (Dzikriansyah et al., 2023; Effendi et al., 2021; Jasin et al., 2023; Novitasari & Agustia, 2022). The implementation of GSCM does not directly impact competitive advantage and financial stability, but rather is mediated by other factors. These results validate the multidimensional benefits of adopting GSCM as a strategic approach to align organizational operations with sustainability imperatives. This study highlights the importance of GSCM in organizational sustainability through environmental performance, economic performance, and social performance in Indonesia.

CONCLUSIONS

The study aims to convince manufacturing company managers in Indonesia that GSCM implementation improves sustainability performance, competitive advantage, and financial stability. By using a questionnaire instrument in which senior managers and directors were the respondents, this study provides evidence of the critical role of GSCM in enhancing sustainability performance, encompassing economic, social, and environmental dimensions. The finding confirms that GSCM practices, such as green purchasing, manufacturing, distribution, marketing, and education, significantly drive superior sustainability outcomes. However, GSCM is not proven to have a direct effect on competitive advantage and financial stability. Other findings indicate that sustainability performance has a positive effect on competitive advantage and financial stability.

In addition to the two previous findings, this study provides evidence that GSCM influences competitive advantage and financial stability through the mediation of sustainability performance. This finding explains that the implementation of green practices in manufacturing companies is more aimed at sustainability performance, which includes environmental, economic, and social factors. If sustainability factors have been achieved, competitive advantages in efficiency, cost saving, and low-cost products are achieved. The implication of the findings is a better explanation to managers and directors to improve the quality of GSCM implementation; the government should immediately ratify the rules for implementing GSCM to all industries.

Future studies should explore the mechanisms through which GSCM practices indirectly influence competitive advantage. Investigating additional mediating or moderating factors, such as organizational culture, technological innovation, or market dynamics, could provide deeper insights into how sustainability practices enhance competitiveness. Longitudinal studies could also offer a comprehensive understanding of the temporal effects of GSCM and sustainability performance on competitive advantage. Additionally, comparative studies across industries or regions could reveal context-specific factors that shape the relationship between GSCM, sustainability, and competitive success, offering valuable practical insights for policymakers and business leaders.

ADDITIONAL INFORMATION

AUTHOR CONTRIBUTIONS

All authors have contributed equally.

FUNDING

The Authors received no funding for this research.

CONFLICT OF INTEREST

The Authors declare that there is no conflict of interest.

REFERENCES

1. Acquah, I. S. K., Agyabeng-Mensah, Y., & Afum, E. (2021). Examining the link among green human resource management practices, green supply chain management practices and performance. *Benchmarking: An International Journal, 28*(1), 267–290. https://doi.org/10.1108/BIJ-09-2020-0486
2. Afum, E., Osei-Ahenkan, V. Y., Agyabeng-Mensah, Y., Amponsah Owusu, J., Kusi, L. Y., & Ankomah, J. (2020). Green manufacturing practices and sustainable performance among Ghanaian manufacturing SMEs: the explanatory link of green supply chain integration. *Management of Environmental Quality: An International Journal, 31*(6), 1457-1475. https://doi.org/10.1108/MEQ-01-2020-0019
3. Alexandrou, S. E., Panayides, P. M., Tsouknidis, D. A., & Alexandrou, A. E. (2022). Green supply chain management strategy and financial performance in the shipping industry. *Maritime Policy & Management*, *49*(3), 376-395. https://doi.org/10.1080/03088839.2021.1883141
4. Alfarizi, M. (2022, December). Literature Review of Climate Change and Indonesia's SDGs Strategic Issues in a Multidisciplinary Perspective. In IOP Conference Series: Earth and Environmental Science (Vol. 1105, No. 1, p. 012040). IOP Publishing. https://doi.org/10.1088/1755-1315/1105/1/012040
5. Al-Khawaldah, R., Al-Zoubi, W., Alshaer, S., Almarshad, M., ALShalabi, F., Altahrawi, M., & Al-Hawary, S. (2022). Green supply chain management and competitive advantage: The mediating role of organizational ambidexterity. *Uncertain Supply Chain Management, 10*(3), 961–972. https://doi.org/10.5267/j.uscm.2022.3
6. Bezverkhyi, K., Kovach, S., & Zolkover, A. (2019). Integrated reporting: econometric model of quality assessment. *Economic Studies*, *28*(5), 120-133. https://ideas.repec.org/a/bas/econst/y2019i5p120-133.html
7. Bezverkhyi K. (2024). Implementation of European Sustainability Reporting Standards. *Foreign Trade: Economics, Finance, Law*, *133*(2), pp. 134–150. https://doi.org/10.31617/3.2024(133)08
8. Chen, S. L., Su, Y. S., Tufail, B., Lam, V. T., Phan, T. T. H., & Ngo, T. Q. (2023). The moderating role of leadership on the relationship between green supply chain management, technological advancement, and knowledge management in sustainable performance. *Environmental Science and Pollution Research, 30*(19), 56654–56669. https://doi.org/10.1007/s11356-023-26397-4
9. Djalante, R., Jupesta, J., & Aldrian, E. (2021). Climate change research, policy and actions in Indonesia. Springer C. *Springer Nature Switzerland AG, 10*, 978-3. https://doi.org/10.1007/978-3-030-55536-8
10. Deegan, C. M. (2019). Legitimacy theory: Despite its enduring popularity and contribution, time is right for a necessary makeover. *Accounting, Auditing & Accountability Journal*, *32*(8), 2307-2329. https://doi.org/10.1108/AAAJ-08-2018-3638
11. Dzikriansyah, M. A., Masudin, I., Zulfikarijah, F., Jihadi, M., & Jatmiko, R. D. (2023). The role of green supply chain management practices on environmental performance: A case of Indonesian small and medium enterprises. *Cleaner Logistics and Supply Chain*, *6*, 100100. https://doi.org/10.1016/j.clscn.2023.100100
12. Effendi, M. I., Widjanarko, H., & Sugandini, D. (2021). Green supply chain integration and technology innovation performance in SMEs: a case study in Indonesia. *The Journal of Asian Finance, Economics and Business*, *8*(4),

DOI: 10.55643/fcaptp.4.63.2025.4778

909-916. https://doi.org/10.13106/jafeb.2021.vol8.no4.0909

13. Foo, M. Y., Kanapathy, K., Zailani, S., & Shaharudin, M. R. (2019). Green purchasing capabilities, practices and institutional pressure. *Management of Environmental Quality: An International Journal*, *30*(5), 1171-1189. https://doi.org/10.1108/MEQ-07-2018-0133

14. Han, Z., & Huo, B. (2020). The impact of green supply chain integration on sustainable performance. *Industrial Management & Data Systems, 120*(4), 657–674. https://doi.org/10.1108/IMDS-04-2019-0211

15. Jasin, M., Sesunan, Y. S., Fatimah, C. E. A., Suzanawaty, L., Amalia, A., Junaedi, I. W. R., & Anisah, H. U. (2023). The role of green supply chain management (GSCM) on the competitiveness and performance of Indonesian manufacturing companies. *Uncertain Supply Chain Management*, *11*(3), 1187-1194. https://doi.org/10.5267/j.uscm.2023.4.004

16. Khan, M., Ajmal, M. M., Jabeen, F., Talwar, S., & Dhir, A. (2023). Green supply chain management in manufacturing firms: A resource-based viewpoint. *Business Strategy and the Environment, 32*(4), 1603-1618. https://doi.org/10.1002/bse.3207

17. Khokhar, M., Zia, S., Islam, T., Sharma, A., Iqbal, W., & Irshad, M. (2022). Going green supply chain management during covid-19, assessing the best supplier selection criteria: a triple bottom line (tbl) approach. *Problemy Ekorozwoju, 17*(1). http://dx.doi.org/10.35784/pe.2022.1.04

18. Mayesti, I., Halimm, A., & Afrizal, A. (2021). Analysis of Indonesian Export-Import Trade Contaction to Destination Countries. *J-MAS (Jurnal Manajemen dan Sains), 6*(2), 491-496. http://dx.doi.org/10.33087/jmas.v6i2.315

19. Naseer, S., Khalid, S., Parveen, S., Abbass, K., Song, H., & Achim, M. V. (2023). COVID-19 outbreak: Impact on global economy. *Frontiers in public health, 10*, 1009393. https://doi.org/10.3389/fpubh.2022.1009393

20. Nazarova, K., Bezverkhyi, K., Hordopolov, V., Melnyk, T., & Poddubna, N. (2021). Risk analysis of companies' activities on the basis of non-financial and financial statements. *Agricultural and Resource Economics: International Scientific E-Journal*, *7*(4), 180-199. https://doi.org/10.51599/are.2021.07.04.10

21. Novitasari, M., & Agustia, D. (2022). The role of green supply chain management and green innovation in the effect of corporate social responsibility on firm performance. *Gestão & Produção*, *29*, e117. https://doi.org/10.1590/1806-9649-2022v29e117

22. Nu'man, A. H., Nurwandi, L., Bachtiar, I., Aspiranti, T., & Pratama, I. (2020). Social networking and firm performance: Mediating role of comparative advantage and sustainable supply chain. *International Journal of Supply Chain Management*. https://doi.org/10.59160/ijscm.v9i3.4971

23. Pinto, L. (2020). Green supply chain practices and company performance in Portuguese manufacturing sector. *Business Strategy and the Environment, 29*(5), 1832-1849. https://doi.org/10.1002/bse.2471

24. Rehman, S. U., Bhatti, A., Kraus, S., & Ferreira, J. J. (2021). The role of environmental management control systems for ecological sustainability and sustainable performance. *Management Decision*, *59*(9), 2217-2237. https://doi.org/10.1108/MD-06-2020-0800

25. Rizqiyani, S. M., Qodriyani, M., & Ashsifa, I. (2024). Survival of ASEAN Firms: Understanding Profitability, Liquidity, and Solvency Dynamics During Financial Distress. KnE Social Sciences, 373-383. https://doi.org/10.18502/kss.v9i17.16372

26. Saragih, J., Tarigan, A., Silalahi, E. F., Wardati, J., & Pratama, I. (2020). Supply chain operational capability and supply chain operational performance: Does the supply chain management and supply chain integration matter? *International Journal of Supply Chain Management, 9*(4), 1222–1229. https://doi.org/10.59160/ijscm.v9i4.5268

27. Setiawan, B., Muawanah, U., Maulana, A., Khoiriyani, F., Astuti, M. T., & Hakim, I. N. (2024). The behaviors of Indonesian domestic ecotourists using a Rasch analysis. *The Bottom Line*, *37*(2), 179-206. https://doi.org/10.1108/BL-06-2023-0180

28. Setiawan, B., Pamungkas, B., Mekaniwati, A., & Kusuma, P. M. (2025). The strategic role of digital transformation, dynamic and agile capabilities for the performance of micro, small, and medium enterprises (MSMEs). *The Bottom Line*, *38*(2), 130-153. https://doi.org/10.1108/BL-08-2024-0120

29. Sharabati, A. A. A. (2021). Green supply chain management and competitive advantage of Jordanian pharmaceutical industry. *Sustainability, 13*(23), 13315. https://doi.org/10.3390/su132313315

30. Sheng, X., Chen, L., Yuan, X., Tang, Y., Yuan, Q., Chen, R., ... & Liu, H. (2023). Green supply chain management for a more sustainable manufacturing industry in China: a critical review. *Environment, Development and Sustainability, 25*(2), 1151-1183. https://doi.org/10.1007/s10668-022-02109-9

31. Waqas, M., Honggang, X., Ahmad, N., Khan, S. A. R., Ullah, Z., & Iqbal, M. (2022). Triggering sustainable firm performance, supply chain competitive advantage, and green innovation through lean, green, and agile supply chain practices. *Environmental Science and Pollution Research*, 1–22. https://doi.org/10.1007/s11356-022-21830-4

32. Yildiz Çankaya, S., & Sezen, B. (2019). Effects of green supply chain management practices on sustainability performance. *Journal of Manufacturing Technology Management, 30*(1), 98–121. https://doi.org/10.1108/JMTM-08-2018-0276

33. Zhang, Q., Gao, B., & Luqman, A. (2022). Linking green supply chain management practices with competitiveness during COVID-19: The role of big data analytics. *Technology in Society, 70*, 102021. https://doi.org/10.1016/j.techsoc.2022.102021

34. Zou, Z., Farnoosh, A., & Mcnamara, T. (2021). Risk analysis in the management of a green supply chain. *Strategic Change, 30*(1), 5-17. https://doi.org/10.1002/jsc.2383

Хасібуан Д. Х. М., Пурванті Д., Сетіаван Д.

«ЗЕЛЕНЕ» УПРАВЛІННЯ ЛАНЦЮГАМИ ПОСТАВОК ЯК СТРАТЕГІЯ ЗМІЦНЕННЯ СТІЙКОСТІ ТА КОНКУРЕНТНОЇ ПЕРЕВАГИ: ВИСНОВКИ ІНДОНЕЗІЙСЬКИХ ВИРОБНИЧИХ КОМПАНІЙ

Зі зростанням глобальної екологічної свідомості компанії дедалі активніше впроваджують екологічно орієнтовані підходи та адаптують свої бізнес-стратегії відповідно до них. Посилення зовнішнього тиску виступає каталізатором для підвищення екологічної ефективності підприємств, однак запровадження зелених бізнес-практик часто потребує значних інвестицій, що змушує менеджерів прагнути отримання відповідної віддачі. Отож, оцінка результативності в царині сталого розвитку залишається надзвичайно актуальною та перспективною темою для подальших наукових досліджень. У цьому дослідженні розглянуто вплив управління зеленим ланцюгом постачання (Green Supply Chain Management, GSCM) на показники сталого розвитку, конкурентну перевагу та фінансову стабільність. Незважаючи на зростання глобального інтересу до цієї теми, емпіричних досліджень — особливо в контексті Індонезії як країни з економікою, що розвивається, — залишається обмаль. У межах кількісного підходу первинні дані було зібрано за допомогою анкетного опитування 85 респондентів, що займають управлінські посади (старші менеджери, генеральні директори, директори) на підприємствах індонезійського виробничого сектора, з подальшим аналізом за допомогою методу структурного моделювання (SEM). Результати свідчать, що GSCM має позитивний вплив на показники сталого розвитку, однак не чинить прямого впливу на конкурентну перевагу чи фінансову стабільність. Натомість сталий розвиток відіграє роль критично важливої медіаційної змінної, яка суттєво підсилює взаємозв'язок між GSCM та стратегічними й фінансовими результатами. Це дослідження вперше на емпіричному рівні демонструє непрямий механізм, за яким GSCM сприяє стратегічним перевагам і фінансовій стабільності через покращення сталого розвитку в умовах індонезійського виробничого контексту. Менеджери, особливо в Індонезії, усе ще виявляють стриманість у впровадженні зелених бізнес-підходів, оскільки, окрім високих витрат, вони не мають повної впевненості в отриманні очікуваних переваг. Крім того, наукові дослідження з цієї проблематики залишаються обмеженими, що особливо актуально для країн, що розвиваються. Розвиваючи концептуальний зв'язок між екологічними практиками та організаційною ефективністю в умовах країн, що розвиваються, це дослідження робить і теоретичний, і практичний внесок, наголошуючи на стратегічній важливості інтеграції екологічних і соціальних міркувань у ключові бізнес-процеси та необхідності загальної організаційної прихильності до сталого розвитку для забезпечення довгострокового створення цінності.

Ключові слова: «зелене» управління ланцюгами поставок, сталий розвиток, показники сталого розвитку, конкурентна перевага

JEL Класифікація: Q01

DOI: 10.55643/fcaptp.4.63.2025.4778